Claims

[1] A process for producing a foam composite having a skin with an even thickness and an integrated foamed body core, being the skin and the core bonded together, wherein a mold is charged with one of plastic powders and minute particles, and polyolefin pellets that can be cross-linked and foamed, being the pellets larger than the plastic powders and the minute particles, the mold is heated from outside while being rotated at within a range from 1 to 20 rpm, so that a plastic skin is formed and the pellets adhere to the skin, and the mold is heated further so that the polyolefin cross-links to the degree of storage elastic modulus thereof within a range from 1.6 to 3.0×10^4 Pa and the pellets expand by the decomposition of a foaming agent.

[2] A process for producing a foam composite having a skin with an even thickness, a foamed body with homogeneous and fine bubbles, and plastic reinforcing members, wherein a mold is charged with one of plastic powders and minute particles, and polyolefin pellets that are larger than the plastic powders and the minute particles, being covered in a portion or in the whole surface with plastic and possible to be cross-linked and foamed, the mold is heated from outside while being rotated at within a range from 1 to 20 rpm, so that a plastic skin is formed and the pellets adhere to the skin, and is heated further permitting that the polyolefin cross-links and the pellets expand by the decomposition of a foaming agent.

[3] The process for producing a foam composite according to Claim 2, wherein a rod of polyolefin is covered with plastic, compressed and cut in a molten state so that the edge sections are bonded, and thus obtained pellets with a covering of the plastic in the whole polyolefin surface are used as the polyolefin pellets, and foamed, permitting the foam composite to have a skin with an even thickness and a core, in which nearly even size granular foamed bodies with a covering of a reinforcing member with practically even thickness are integrated, bonded mutually, filling in the core, and

further, bonded to the skin.

[4] The process for producing a foam composite according to Claim 2, wherein a rod of polyolefin is covered with plastic, cooled and cut, and thus obtained polyolefin pellets with a covering of the plastic in the portion of the polyolefin are used as the polyolefin pellets, permitting the foam composite to have a skin with an even thickness and a core, in which one of belt-shape, string-shape and solid reinforcing members are intermingled with foamed bodies.

[5] The process for producing a foam composite according to either one of Claim 2 and Claim 3, wherein the thickness of the skin is within a range from 1 to 10 mm, the density of the foamed body; from 0.1 to 0.01 g/cm^3, the diameter of the foamed body; from 5 to 25 mm, and the thickness of the reinforcing members; from 0.05 to 0.5 mm.

[6] The process for producing a foam composite according to either one of Claim 1 to 5, wherein the plastic powders and the minute particles contain a foaming agent within a range from 1 to 10 PHR.

[7] The process for producing a foam composite according to either one of Claim 2 to 6, wherein the plastic used for covering the polyolefin that can be cross-linked and foamed contains a foaming agent within a range from 1 to 10 PHR.

[8] The process for producing a foam composite according to either one of Claim 2 to 7, wherein the quantity of the plastic pellets used is adjusted so that a hollow section with a similar figure to the foam composite is provided in the center thereof.

[9] The process for producing a foam composite according to either one of Claim 2 to 8, wherein one of rubber waste, plastic waste, composite material waste and the foam composite waste is crushed, and the mold is charged with the crushed waste, permitting

the waste to be enclosed inside.

[10] The process for producing a foam composite according to either one of Claim 1 to 9, wherein the plastic powders or the minute particles is one of high density polyethylene, polypropylene, nylon, and the mixture thereof.

[11] The process for producing a foam composite according to either one of Claim 2 to 10, wherein the plastic used for covering the polyolefin that can be cross-linked and foamed is one of high density polyethylene, polypropylene, nylon and the mixture thereof.

[12] The process for producing a foam composite according to either one of Claim 1 to 11, wherein flame retardant plastic is used as the plastic powders or the minute particles, or a flame retardant is added to the plastic powders and the minute particles.

[13] The process for producing a foam composite according to either one of Claim 2 to 12, wherein the foam composite has metal fittings inside, and the fittings are secured strongly with the reinforcing members.

[14] The process for producing a foam composite according to either one of Claim 1 to 13, wherein the plastic powders and the minute particles contain one of polyethylene and ethylene-vinyl acetate copolymer, and an organic peroxide within a range from 0.2 to 2.0 PHR.

[15] A storage method wherein a large can is made by the process according to either one of Claim 1 to 14, a stainless steel can which contains radioactive waste is placed inside of the large can, low-molecular weight rubber which melts at 100°C while does not melt at 40°C is filled between the two cans, and a lid is provided, permitting the storage of the radioactive waste.

[16] An oil fence that enables recovery of oil, wherein a plurality of a foam composite long cylinder with a semicircular cross-section, and a concave and a convex section at the either end of the cylinder enabling the cylinders to be joined together, are formed according to either one of Claim 1 to 14, the cylinders are joined together and installed in the sea so that the half of the cylinder is submerged and the sea level reaches the semicircular center position of the cylinder.

[17] A construction material, wherein four square-shape holes are formed for each end surfaces of a square pillar and adjacent four side surfaces thereof by the process according to either one of Claim 1 to 14, and the square pillar is joined to another square pillar with a joint member having twice the size of the hole, further, a board with holes is brought together with the joint member.

[18] A flotation material, that floats being possible to be driven on water, wherein one of a board and a boat of a foam composite is formed by the process according to either one of Claim 1 to 14, and a motor, a screw, a battery, and a switch are fixed on the board and the boat.

[19] A chair for a vehicle, wherein a seat, an elbow, and a back are formed in an one-construction shaped body by the process according to either one of Claim 1 to 14, and a bolt or a nut is embedded in the lower side middle of the seat, permitting the chair to be fixed on a vehicle.

[20] A container that is readily assembled and dismantled, wherein a board with one of a convex section and a concave section is formed according to either one of Claim 1 to 14, four of the board are assembled respectively as a side member, and two of the board with one of a convex section and a concave section are joined to the side members, one in the upper side and another in the lower side, composing the bottom and

the lid of the container.

[21] A container which comprises a box-shape body that is formed by folding a board with grooves along the grooves, wherein the board is formed by the process according to either one of Claim 1 to 14, and the board has rectangular board parts which form the sides of the container, being connected to the four side sections of a square board part, and grooves being provided in the section where the square board part and the rectangular board parts are connected together.

[22] A seat for a vehicle that is produced by the process according to either one of Claim 1 to 14, wherein the seat is composed of one of a large rectangular body with a soft skin, and a large rectangular body with a hollow section.

[23] A corrosion-preventive method for a steel pipe, wherein a two-piece cover is made by the process according to either one of Claim 1 to 14, and the portion of the steel pipe, that is soaked in seawater and is dried by turns, is covered with the two-piece cover, thereby preventing seawater from coming in.

[24] An insulated pipe with one of a male and a female screw at both ends for enabling the connection of the pipe is produced by the process according to either one of Claim 1 to 14, wherein the pipe is composed of a foam composite comprising a skin, a foamed body, and, if necessary, reinforcing members.

[25] A complex body of a foam composite produced by a process according to either one of Claim 1 to 14, wherein the foam composite is placed in a closed metal body and adhered to the metal body.

[26] The polyolefin pellet that can be cross-linked and foamed, which is used in the process according to either one of Claim 3 to 14, wherein a rod with the size from 2

to 10 mm in diameter is extruded with polyolefin that can be cross-linked and foamed, provided with a plastic covering of the thickness from 0.5 to 5 mm on the surface of the rod, compressed and cut in the molten state with a cutter having an end of an acute angle so that the plastic of both ends to be bonded and the thickness of the bonded section to be 0.3 mm or greater.

[27] Equipment for manufacturing a double-layered foaming pellet which is used in a process according to either one of Claim 2 to 14, wherein the equipment comprises extruders and a cross head die, one extruder being able to extrude a mixture of polyolefin with a cross-linking agent and a foaming agent into a rod with the size from 2 to 10 mm, and another extruder being able to provide a plastic covering with thickness from 0.5 to 5 mm on the rod, enabling thus obtained double-layered rod to be cut in a molten state so that the covering being bonded and the thickness at the section being within a range from 0.3 mm to 5 mm, and the cutting thereof within a range from 3 to 15 mm in length being possible.

[28] The double-layered foaming pellet that is used in a process according to either one of Claim 2 to 14, comprising a pellet of polyolefin mixed with a cross-linking agent and a foaming agent, having a size from 8 to 1000mm^3, and a plastic covering with an even thickness from 0.5 to 5 mm on the pellet, the covering being bonded in both ends having a thickness of 0.3 mm or greater, permitting all surface of the double-layered foaming pellet being covered and the shape thereof being rectangular when the pellet is seen toward the direction of the compression, while being bulged in the center and flat in the end section when the pellet is seen from the side.

[29] The process for producing a foam composite according to either one of Claim 1 to 14, wherein the skin has a thickness of 2 mm or greater, enabling that the foam composite absorbs almost no moisture.